

## Title: Making Solutions and Making Butter

Objectives: The students will be able to explain that:

- solutions/MIXTURES (can re-discuss liquids/solids) are made up of other parts even when we can't see them easily, and
- fat doesn't mix well with liquids like water.

New Vocabulary: solution, dissolves

New/repeated Skills: use of transfer pipets, being careful and calm as scientists, observing carefully.

Materials: tray per student, water, sugar, oil, pipets, spoons, cups, large cup (to collect mixtures in before doing next expt), plastic screw-cap bottle (for shaking cream to make butter), **bread**, towels for shaking

Pre-class setup:

each student needs a Styrofoam tray with:

- a transfer pipet (like an eyedropper) & a spoon
- a small Dixie cup with 2 spoonfuls of sugar in it (or the teacher can keep this)
- a small Dixie cup with a little oil in it (just enough to transfer ~3ml -or the teacher can keep this)
- 1 larger cup with water

Need capped bottles with cream in it (one per 4-6 students?)

Procedure:

1. Review what we did last week: Last week we put 2 things together (baking soda and vinegar) to make something new (carbon dioxide bubbles). This process was called a reaction. We discussed solid, liquids, and gases. We noticed that we can't always see gases but we have ways to show they are present (using the balloon to capture the gas, listening to it leave the balloon).

2. Start Experiment: **Shaking cream to make butter**

Procedure: Put cream in jar with a lid and shake back and forth for about 10 minutes. Take turns shaking. Watch what is happening. (keep towels handy for any little leaks).

Observation: Cream separates into parts.

Realization: Cream looked like one thing but really it is made up of other parts.

(Explanation: The cream has little globs of fat and protein. When you shake the jar, the fat and the protein hit each other and stick together making a larger and larger glob. The glob is butter!)

3. Make Mixture 1: **water and sugar**: Use spoons to transfer sugar into the larger cup containing a little water.

Procedure: Combine water and sugar. Mix. Observe.

Observation: Two things mix and look like one thing now.

Realization: The sugar-water mixture looks like one thing but we know it has parts. Not all things mix.

Post-expt: Empty the mixture into the teacher's collection cup. (Teacher: add new water for next step.)

4. Make Mixture 2 **water and oil**: Use pipettes to transfer oil into the larger cup containing a little water.

Procedure: Student: Use pipets to transfer some oil into cup with water. Mix. Observe.

Observation: Two things don't mix.

Realization: Sometimes when you mix things together it is obvious that there are two parts in the mixture.

Post-expt: Empty the mixture into the teacher's collection cup. b/c of the oil these are difficult to clean – need to use soap and water to re-use.

5. Eat butter from shaking experiment on a piece of bread. Yum!